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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/111,454	07/08/1998	ARIEL BEN-PORATH	49959-013	5838

32588 7590 05/24/2004

APPLIED MATERIALS, INC.
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EXAMINER	
BALI, VIKKRAM	

ART UNIT	PAPER NUMBER
2623	

DATE MAILED: 05/24/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/111,454	Applicant(s) BEN-PORATH ET AL	
	Examiner Vikkram Bali	Art Unit 2623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 March 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,6-8,18-20,23-25,35-38 and 40-48* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,6-8,18-20,23-25,35-38 and 40-48* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

In response to the amendment filled on 3/12/2004, all the amendments have been entered and the action follows:

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1-3, 6-8, 18-20, 23-25, 37-38 and 40-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mizuno (US 6047083) in view of Broude et al (US 5814829) and in further view of Shimizu (US 4849901).

With respect to claims 1-3, 6-8, 18-20, 23-25, 37-38 and 40-42, the rejections are respectfully maintained and incorporated by references as set forth in the prior office action (paper #29).

4. Claims 35-36 and 43-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mizuno (US 6047083) in view of Broude et al (US 5814829) and in further view of Shimizu (US 4849901) as applied to claim 18 above, and further in view of Shahar et al (US 5591971).

With respect to claims 35-36 and 43-45, the rejections are respectfully maintained and incorporated by references as set forth in the prior office action (paper #29).

5. Claims 46 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mizuno in view of Shahar et al.

With respect to claim 46, the rejections are respectfully maintained and incorporated by references as set forth in the prior office action (paper #29).

6. Claim 47 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mizuno in view of Shahar et al as applied to claim 46 above, and further in view of Takagi et al (US 5801965).

With respect to claim 47, the rejections are respectfully maintained and incorporated by references as set forth in the prior office action (paper #29).

7. Claim 48 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mizuno in view of Shahar et al as applied to claim 46 above, and further in view of Tsuchiya et al (US 5960106).

With respect to claim 48, the rejections are respectfully maintained and incorporated by references as set forth in the prior office action (paper #29).

Response to Arguments

8. Applicant's arguments filed 3/12/2004 have been fully considered but they are not persuasive.

In response to applicant's argument that the combination of references Mizuno and Broude is not obvious, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

In this case, for the combination of references Mizuno, Broude and Shimizu, considering claim 1, Mizuno discloses method and system for manufacturing

semiconductor devices and method and system for inspecting semiconductor devices comprising "imaging the surface" (see figure 1, detector for the taking the image of the article); and "classifying each of the defects as being in one of a predetermined number of invariant core classes of defects", (see figure 7, and col. 3, line 56-59 and lines 38-41, the invariant core classes are the short circuit, line breakage etc) as claimed. However, he fails to disclose: "determining a total number of defects in each of the core classes"; and "generating an alarm signal when the total number of defects in a specific one of the core classes is equal to or greater than a first predetermined number", as claimed. Broude in a system for inspection teaches "determining a total number of defects in each of the core classes"; and "generating a signal when the total number of defects in a specific one of the core classes is equal to or greater than a first predetermined number", (see Abstract, lines 2-12, wherein the flaws are detected and counted and the compared to an threshold and if the counter exceeds the threshold a signal is generated) as claimed.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Mizuno's method and system for manufacturing semiconductor devices and method and system for inspecting semiconductor devices by introducing a counter for counting the defects, comparing the counter to a threshold, and if the threshold exceeds a limit generating a signal as taught by Broude in his inspection system. This modification will provide an inspection system for an article that will detect the defects and classify the defects in the different classes and will have a counter for counting the defects, comparing the counter to a threshold, and if the

threshold exceeds a limit generating a signal to stop the process in order to get a better yield.

Mizuno and Broude fail to disclose "generating a alarm" as claimed. Shimizu in substrate inspection for flatness and alarm teaches "generating a alarm", (see col. 8, lines 61-64, it states that a alarm ALM-2 [notifying an operator] is generated if the number of chips having a flaw i.e. poor flatness exceeds a predetermined number and eventually the system is stopped) as claimed.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Mizuno's and Broude's method and system for manufacturing semiconductor devices and method and system for inspecting semiconductor devices by introducing an alarm if the flaw exceeds a predetermined number on a wafer (see col. 8, lines 61-64) as taught by Shimizu, as all the references are analogous because they are solving similar problem of inspection. The motivation of combining the alarm in to the system is straight forward as in any system tat is time and money based to make sure if any fault in the inspection of the article go more than a threshold then the system provides an alarm to an operator to interface in the system in order to rectify the problem in order to better yield.

Applicant also argues that neither Mizuno no Shahar discloses optical imager, examiner disagrees. Reference Shahar in a scanning electronic microcopy teaches an optical image, (see figure 1, numerical 10 for the column, being the SEM and numerical 240 and 250 for the optical detectors and col. 5, lines 15-21 for description, the electrons are the emitted light that is sensed by the sensor), as claimed.

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vikkram Bali whose telephone number is 703.305.4510. The examiner can normally be reached on 7:30 AM - 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amelia Au can be reached on 703.308.6604. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Vikkram Bali
Primary Examiner
Art Unit 2623

vb
May 20, 2004